

SEQUENCE LISTING

<110> Bukh, Jens
Purcell, Robert
Yanagi, Masayuki
Emerson, Suzanne

<120> Infectious cDNA Clone of GB virus B and Uses Thereof

<130> 2026-4308PC

<140> TBA
<141> 2000-06-02

<150> 60/137,694
<151> 1999-06-04

<160> 5

<170> PatentIn Ver. 2.1

<210> 1
<211> 9399
<212> DNA
<213> GBV-B virus

<400> 1
accacaaaca ctccagtttgc ttacactccg ctaggaatgc tcctggagca cccccccctag 60
cagggcggtgg gggatttccc ctgcccgtct gcagaagggt ggagccaacc accttagtat 120
gtaggcgcgq ggactcatga cgctcgctg atgacaagcg ccaagcttga cttggatggc 180
cctgatggc gttcatgggt tcggtggtgg tggcgcttta ggcagcctcc acgcccacca 240
cctcccaagat agagcggcgg cactgttaggg aagaccgggg accggtcact accaaggacg 300
cagaccttctt tttgagtatc acgcctccgg aagttagttgg gcaagcccac ctatatgtgt 360
tgggatggtt ggggttagcc atccataccg tactgcctga tagggcctt gcgaggggat 420
ctgggagttct cgttagaccgt agcacatgcc tgttatttct actcaaacaa gtcctgtacc 480
tgcgcccaga acgcgcaaga acaagcagac gcaggcttca tatcctgtgt ccattaaaac 540
atctgttcaa aggggacaac gagcaaagcg caaatccag cgcatgctc ggccttgtaa 600
ttacaaaatt gctggtatcc atgatggctt gcagacatttgc gtcaggctg ctttgccagc 660
tcatggttgg ggacgccaag accctcgcca taagtctcg aatcttggaa tccctcttggaa 720
ttaccctttg ggggtggatttgc gtgatgttac aactcacaca cctcttagtag gcccgttgtt 780
ggcaggagcg gtcgttcgac cagtctgcca gatagtacgc ttgctggagg atggagtcaa 840
ctgggctact ggttggttcg gtgtccaccc ttttggta tgcctgttat ctttggctt 900
tccctgttagt gggcgccgg tcactgaccc agacacaaat accacaatcc tgaccaatttgc 960
ctgccagcgt aatcaggtta tctattgttc tccttccact tgcctacacg agcctggtttgc 1020
tgtgatctgt gcgacgactt gctgggttcc cgccaaatccg tacatctcac acccttccaa 1080
ttggactggc acggactcct tcttggctga ccacatttgc tttgttatgg gcgctttgtt 1140
gacctgtgac gcccttgaca ttgggtgat gttgtggcgtc tgtgttatttttgc 1200
gcttgcagg cactggcttta ttcacataga cctcaatgaa actggtaactt gttaccttggaa 1260

agtccccact ggaatagatc ctgggttcctt agggtttatac gggtgatgg ccggcaaggt 1320
cgaggctgta atcttcttga ccaaactggc ttcacaagta ccatacgcta ttgcgactat 1380
gttttagcagt gtacactacc tggcggttgg cgctctgatc tactatgcct ctcggggcaa 1440
gtggtatcag ttgtctcttag cgcttatgct ttacatagaa gcgacctctg gaaaccccat 1500
cagggtgccc actggatgct caatagctga gtttgcctcg ccttgcata taccatgtcc 1560
ttgccactt tattttagtga agaatgtgtc agaagtctt tggtacagtc caaagtggac 1620
caggcctatc actcttaggt ataacaactc catacttgg taccctata caatccctgg 1680
tgcgagggta tgtatggta aattcaaaaa taacacatgg gggtgctgcc gtattcgaa 1740
tgtgccatcg tactgcacta tgggcactga tgcagtgtgg aacgacactc gcaacactta 1800
cgaagcatgc ggtgtaaacac catggctaac aaccgcattgg cacaacggct cagccctgaa 1860
attggctata ttacaatacc ctgggtctaa agaaatgttt aaacctata attggatgtc 1920
aggccatttgc tattttgagg gatcagatac ccctatagtt tactttatg accctgtgaa 1980
ttccactctc ctaccacccgg agaggtggc taggttgcctt ggtacccac ctgtggtacg 2040
tggttcttgg ttacagggtt cgcagggtt ttacagtgtat gtgaaagacc tagccacagg 2100
attgatcacc aaagacaaaag cctggaaaaaa ttatcagggtc ttatattccg ccacgggtgc 2160
tttgcctt acgggagtttta ccaccaaggc cgtggtgcta attctgttgg gggtgtgtgg 2220
cagcaagttt cttatccat cctacccctg ttacttgcctt ctttgccttgg ggccgcgttc 2280
tggttacctt ttgcgtcttgc tgctccatc ccagtcgtat ctccaagctg gctggatgt 2340
tttgcctaaa gctcaagtagt ctcctttgc ttgttgcctt ttcatctgtt gctatctccg 2400
ctgcaggctt cgttatgtgt cccttttagg gtttgcctt atggctgcgg gcttgccttgc 2460
aactttctt gttcagcag ctgcgtccca accagattat gactgggtgg tgctgactgt 2520
agtggcaggg ttagtttgc tggccggccg taaccgtgtt caccgcata ctcgtttgt 2580
aggtccttgg cctctggtag cgcttttaac cctcttgcattt ttgggttacgc ctgtttcagc 2640
ttttgatacc gagataattt gagggtgtac aataccacat gtagtagcat tagttgtcat 2700
gtctcgatcc ggcttcttgc ctcacttgc ttgttgcctt gctttagtta actcctatct 2760
ttggcaacgt tggagaatt gttttggaa cgttacacta agaccggaga ggttttcctt 2820
tgtgctgggt tggggcccttgc tgctggacata tgacgcgtt gtttttttttgcgtt 2880
cgtagctctt ctatgtttaa catccagtgc agcatcgatc ttgttgcgtt actcttaggt 2940
tagggcccat agaatgttgg tgctgtccgg aaagtgtcat gtttttttttgcgtt 3000
tcttaagttt ttcttcttgc tggggcccttgc tgatgggtgtt ttttttttttgcgtt 3060
tggtgatgtc ttgcctaatg attttgcctt gaaactacca ttgcaagagc catttttttttgcgtt 3120
ttttgaaggc aaggcaaggg tctataggaa tgaaggaaga cgcttggcgt gtggggacac 3180
ggttgatgggt ttggccgttgc ttgcgtcttgc cggcgacccctt gtttttttttgcgtt 3240
gccgcccagat gggggccca ttaccgcacc ttttgcgttgc cagtttttttgcgtt ctgaacgtgg 3300
cacgcgttca gcatggcag tggcatgac tggatagac ccccgaaactt ggactggaaac 3360
tatcttcaga ttaggatctc tggccacttag ctacatggga ttttttttttgcgtt 3420
gtataactgtt caccatggca gcaaggggcg ccgggttgcgtt ctttttttttgcgtt 3480
cccaataacc gttgacgcgg ctaatgacca ggacatctat caaccacccat gtggagctgg 3540
gttttttttttgcgtt cgggttttttgcgtt ccggggagac caagggttat ctttttttttgcgtt 3600
attgggttgcgtt gtcacaaat ccgtatggcc ttatttttttgcgtt gtttttttttgcgtt 3660
ggctgttgcgtt aagggttctt caggttgcggc gatttttttgcgtt cccttttttgcgtt 3720
gatgttgcgtt gtcacaaat ccgtatggcc ttatttttttgcgtt gtttttttttgcgtt 3780
gggtgtgtgt gtggatggcc cccaggatcac agcacaatggcc acttttttttgcgtt 3840
tgtgccttacac gatgttgcgtt gtcacaaatccat ccgtatggcc ttatttttttgcgtt 3900
caaattacca ctttttttgcgtt gtcacaaatccat ccgtatggcc ttatttttttgcgtt 3960
ggctacaaca gcatcaatgc caaaggatcac gcacgcgttgc tacggcgatgc atccaaatttgcgtt 4020
ctatccatccat ccgtatggcc ggttttttgcgtt acgtacagca catatggcat 4080
gtacctgacc ggagcatgtt cccggaaacta tgatgtatccat attttttttgcgtt 4140

tacagggtac actgggtact ttgattccgt gtatgactgc agcctcatgg tagaaggcac 4560
atgccatgtt gaccttgacc ctactttcac catgggtgtt cgtgtgtgcg gggttcagc 4620
aatagttaaa ggcgcagcgta ggggcccgcac aggccgtggg agagctggca tatactacta 4680
tgttagacggg agttgtaccc cttcgggtat ggttctgaa tgcaacattt tgaaaggcctt 4740
cgacgcagcc aaggcatggt atgggttgc atcaacagaa gctcaaacta ttctggacac 4800
ctatcgacc caacctgggt tacctgcgat aggagcaat ttggacgagt gggctgatct 4860
ctttctatg gtcaaccccg aaccttcatt tgtcaatact gaaaaaagaa ctgctgacaa 4920
ttatgtttt tgactgcag cccaactaca actgtgtcat cagtatggct atgctgtcc 4980
caatgacgca ccacgggtggc agggagccc gcttggggaa aaaccttgcg 5040
gctgttggac ggcgcgtgacg cctgtccctgg cccagagccc agcgagggtga ccagatacca 5100
aatgtgttc actgaagtca atacttctgg gacagccgca ctcgctgttgcg 5160
ggctatggct tatctagcca ttgacacttt tggcgcact tgggtgcggc gttgctggc 5220
tattacatca gtcccttaccg gtgtactgt cgccccagtg gttgacgaaag aagaaatcg 5280
ggaggagtgt gcatcattca ttcccttggc ggccatgtt gctgcaattt acaagctgaa 5340
gagtacaatc accacaacta gtccttcac attggaaacc gcccttggaaa aacttaaacac 5400
ctttcttggg cctcatgcag ctacaatcct tgctatcata gagtattgtt gtggtttagt 5460
cactttaccc gacaatccct ttgcatcatg cgtgtttgtt ttcattgcgg gtattactac 5520
cccactaccc cacaagatca aaatgttccct gtcattatcc ggaggcgcaaa ttgcgtccaa 5580
gcttacagac gcttagaggcg cactggcggtt catgtatggcc gggctgcgg gaacagetct 5640
tggtacatgg acatcggtgg gttttgtctt tgacatgcta ggccgctatg ctggccgcctc 5700
atccactgct tgcttgacat taaaatgtt gatgggtgag tggcccaacta tggatcagct 5760
tgctgggtta gtctactccg cgttcaatcc ggccgcagga gttgtggcg tcttgcagc 5820
ttgtgcaatg ttgctttga caacagcagg gccagatcac tggcccaaca gacttcttac 5880
tatgcttgct aggagcaaca ctgtatgtaa tgagtacttt attggccactc gtgacatccg 5940
caggaagata ctgggcatttc tggaggcatc tacccttgg agtgtcatat cagcttgcac 6000
ccgttggctc cacaccccgaa cggaggatga ttgcggcctc attgcttggg gtctagagat 6060
ttggcagttat gtgtgcaatt tctttgtat ttgctttaat gtccttaaag ctggagttca 6120
gagcatgtt aacattccctg gttgtccctt ctacagctgc cagaagggtt acaaggcccc 6180
ctggatttggc tcaggtatgc tccaaacgcg ctgtccatgc ggtgtgttgc acatctttc 6240
tggtgagaat gttttgc当地 aactttacaa aggacccaga acttgc当地 attactggag 6300
aggggctgtt ccagtcaacg ctaggtgttgc tgggtgcgtt agaccggacc caactgattt 6360
gacttagtctt gtcgtcaatt atggcgtag ggactactgt aaatatgaga aaatgggaga 6420
tcacatccc ttacagcag tttccctccaa aaatgtctgtt ttccacccagg tgcccccaac 6480
cttgagagct gcagtggccg tggacggcggtt acagggttgc tggatcttagt gtgagccca 6540
aactccctgg acgacatctg cttgtgttgc cggcctgtac ggtaagggtt aactgttta 6600
gcttcccttc cgcgttgacg gtcacacacc tgggtgtgcgc atgcaacttta atttgcgtt 6660
tgcaacttgc当地 acaaatttact gtaattccac aaacaacact ccttagtgc当地 aagccgcag 6720
gtccgc当地 tt gtttcaaac aggagtgc当地 gctgacaaac caattgc当地 aggcaattt 6780
agctggcggtt gacaccacca aactgccagc cccctccatc gaagaggtag tggtaagaaa 6840
gcgc当地 cggc当地 aagaa ctgggtgc当地 taccttgc当地 cccctccga gatccgtccc 6900
aggagtgtca tggcttgaaa gcctgcaacg aagtgc当地 ttagaagggtc cttcaaaactt 6960
ccctccctca ccacctgttcc tacagttggc catgccc当地 cccctgttgg gagcgggtga 7020

gtgttaaccct ttcactgcaa ttggatgtgc aatgaccgaa acaggcggag gccctgatga 7080
 tttacccagt tacccctcca aaaaggaggt ctctgaatgg tcagacgaaa gttggtcgac 7140
 ggctacaacc gctccagct acgttactgg ccccccgtac cctaagatac ggggaaagga 7200
 ttccactcag tcagcccccg ccaaacggcc tacaaaaaag aagttggaa agagttagtt 7260
 ttcgtgcagc atgagctaca cctggaccga cgtgattagc ttcaaaaactg cttctaaagt 7320
 tctgtctgca actcgggcca tcactagtgg tttcctcaaa caaagatcat tggtgtatgt 7380
 gactgagccg cggatgcgg agcttagaaa acaaaaagtc actattaata gacaacotct 7440
 gttcccccca tcataccaca agcaagttag attggctaag gaaaaagctt caaaagttgt 7500
 cggtgtcatg tggactatg atgaagtagc agctcacacg ccctctaagt ctgctaagtc 7560
 ccacatcaact ggccttcggg gcactgatgt tcgttctgga gcagcccgca aggctgttct 7620
 ggacttgcag aagtgtgtcg aggcaaggta gataccgagt cattatcgcc aaactgtgat 7680
 agttccaaag gaggaggct tcgtgaagac ccccccagaaa ccaacaaaga aacccccaag 7740
 gcttatctcg tacccccacc ttgaaatgag atgtgttgag aagatgtact acggtcaggt 7800
 tgctcctgac gtagttaaag ctgtcatggg agatgcgtac gggttttagt atccacgtac 7860
 ccgtgtcaag cgctctttgt cgatgtggc acccgatgca gtcggagcca catgcgatac 7920
 agtgtgtttt gacagtacca tcacacccga ggatatcatg gtggagacag acatctactc 7980
 agcagctaaa ctcaagtgacc aacacccgagc tggcattcac accattgcga ggcagttata 8040
 cgctggagga ccgatgatcg cttatgatgg ccgagagatc ggatatcgta ggttaggtc 8100
 ttccggcgctc tataactacct caagttccaa cagtttgacc tgctggctga aggtaaatgc 8160
 tgcagccgaa caggctggca tgaagaaccc tcgcttcctt atttgcggcg atgattgcac 8220
 cgttaatttgg aagagcgccg gagcagatgc agacaaaacaa gcaatgcgtg tctttgttag 8280
 ctggatgaag gtgatgggtg caccacaaga ttgtgtgcct caacccaaat acagtttgg 8340
 agaattaaca tcatgctcat caaatgttac ctctggaaatt accaaaaagtg gcaaggctta 8400
 ctactttctt acaagagatc ctcgtatccc cttggcagg tgctctgccc agggtctggg 8460
 atacaacccc agtgctgcgt ggattggta tctaatacat cactacccat gtttgtgggt 8520
 tagccgtgtg ttggctgtcc atttcatgga gcagatgctc tttgaggaca aacttcccg 8580
 gactgtgacc ttgactggat atggaaaaaa ttatacgggt cctgttagaag atctgcccag 8640
 catcattgct ggtgtgcacg gtattgaggc tttctcggtg gtgcgttaca ccaacgctga 8700
 gatcctcaga gtttccaaat cactaacaga catgaccatg ccccccctgc gagcctggcg 8760
 aaagaaaagcc aggccgggtcc tcgccagcgc caagaggcgt ggcggagcac acgaaaaatt 8820
 ggctcgcttc cttctctggc atgctacatc tagacctcta ccagatttgg ataagacgag 8880
 cgtggctcgg tacaccactt tcaattattt tgatgtttac tccccggagg gggatgtgtt 8940
 tattacacca cagagaagat tgcagaagtt ccttggtaag tatttggctg tcattgtttt 9000
 tgccctaggg ctcattgctg ttggattagc catcagctga acccccaaatt tcaaaaattaa 9060
 ctaacagttt tttttttttt tttttttttt agggcagcgg caacagggga gaccccgggc 9120
 ttaacgaccc cgcgcgtgtg agtttggcga ccatggtggta tcagaaccgt ttcgggtgaa 9180
 gccatggctc gaaggggatg acgtcccttc tggctcatcc acaaaaaaccg tctcgggtgg 9240
 gtgaggagtc ctgctgtgt gggaaagcagt cagtataatt cccgtcgtgt gtggtgacgc 9300
 ctcacgacgt atttgcgc tgcagacgt gtatcacca gggctgcacc ccggttttt 9360
 ttccaagccg aggcaaccc ccgcttggaa ttaaaaact 9399

<210> 2
 <211> 2864
 <212> PRT
 <213> GBV-B virus

<400> 2

Met Pro Val Ile Ser Thr Gln Thr Ser Pro Val Pro Ala Pro Arg Thr
1 5 10 15

Arg Lys Asn Lys Gln Thr Gln Ala Ser Tyr Pro Val Ser Ile Lys Thr
20 25 30

Ser Val Glu Arg Gly Gln Arg Ala Lys Arg Lys Val Gln Arg Asp Ala
35 40 45

Arg Pro Arg Asn Tyr Lys Ile Ala Gly Ile His Asp Gly Leu Gln Thr
50 55 60

Leu Ala Gln Ala Ala Leu Pro Ala His Gly Trp Gly Arg Gln Asp Pro
65 70 75 80

Arg His Lys Ser Arg Asn Leu Gly Ile Leu Leu Asp Tyr Pro Leu Gly
85 90 95

Trp Ile Gly Asp Val Thr Thr His Thr Pro Leu Val Gly Pro Leu Val
100 105 110

Ala Gly Ala Val Val Arg Pro Val Cys Gln Ile Val Arg Leu Leu Glu
115 120 125

Asp Gly Val Asn Trp Ala Thr Gly Trp Phe Gly Val His Leu Phe Val
130 135 140

Val Cys Leu Leu Ser Leu Ala Cys Pro Cys Ser Gly Ala Arg Val Thr
145 150 155 160

Asp Pro Asp Thr Asn Thr Thr Ile Leu Thr Asn Cys Cys Gln Arg Asn
165 170 175

Gln Val Ile Tyr Cys Ser Pro Ser Thr Cys Leu His Glu Pro Gly Cys
180 185 190

Val Ile Cys Ala Asp Glu Cys Trp Val Pro Ala Asn Pro Tyr Ile Ser
195 200 205

His Pro Ser Asn Trp Thr Gly Thr Asp Ser Phe Leu Ala Asp His Ile
210 215 220

Asp Phe Val Met Gly Ala Leu Val Thr Cys Asp Ala Leu Asp Ile Gly
225 230 235 240

Glu Leu Cys Gly Ala Cys Val Leu Val Gly Asp Trp Leu Val Arg His
245 250 255

Trp Leu Ile His Ile Asp Leu Asn Glu Thr Gly Thr Cys Tyr Leu Glu
260 265 270

Val Pro Thr Gly Ile Asp Pro Gly Phe Leu Gly Phe Ile Gly Trp Met
275 280 285

Ala Gly Lys Val Glu Ala Val Ile Phe Leu Thr Lys Leu Ala Ser Gln
290 295 300

Val Pro Tyr Ala Ile Ala Thr Met Phe Ser Ser Val His Tyr Leu Ala
305 310 315 320

Val Gly Ala Leu Ile Tyr Tyr Ala Ser Arg Gly Lys Trp Tyr Gln Leu
325 330 335

Leu Leu Ala Leu Met Leu Tyr Ile Glu Ala Thr Ser Gly Asn Pro Ile
340 345 350

Arg Val Pro Thr Gly Cys Ser Ile Ala Glu Phe Cys Ser Pro Leu Met
355 360 365

Ile Pro Cys Pro Cys His Ser Tyr Leu Ser Glu Asn Val Ser Glu Val
370 375 380

Ile Cys Tyr Ser Pro Lys Trp Thr Arg Pro Ile Thr Leu Glu Tyr Asn
385 390 395 400

Asn Ser Ile Ser Trp Tyr Pro Tyr Thr Ile Pro Gly Ala Arg Gly Cys
405 410 415

Met Val Lys Phe Lys Asn Asn Thr Trp Gly Cys Cys Arg Ile Arg Asn
420 425 430

Val Pro Ser Tyr Cys Thr Met Gly Thr Asp Ala Val Trp Asn Asp Thr
435 440 445

Arg Asn Thr Tyr Glu Ala Cys Gly Val Thr Pro Trp Leu Thr Thr Ala
450 455 460

Trp His Asn Gly Ser Ala Leu Lys Leu Ala Ile Leu Gln Tyr Pro Gly
465 470 475 480

Ser Lys Glu Met Phe Lys Pro His Asn Trp Met Ser Gly His Leu Tyr
485 490 495

Phe Glu Gly Ser Asp Thr Pro Ile Val Tyr Phe Tyr Asp Pro Val Asn
500 505 510

Ser Thr Leu Leu Pro Pro Glu Arg Trp Ala Arg Leu Pro Gly Thr Pro
515 520 525

Pro Val Val Arg Gly Ser Trp Leu Gln Val Pro Gln Gly Phe Tyr Ser
530 535 540

Asp Val Lys Asp Leu Ala Thr Gly Leu Ile Thr Lys Asp Lys Ala Trp
545 550 555 560

Lys Asn Tyr Gln Val Leu Tyr Ser Ala Thr Gly Ala Leu Ser Leu Thr
565 570 575

Gly Val Thr Thr Lys Ala Val Val Leu Ile Leu Leu Gly Leu Cys Gly
580 585 590

Ser Lys Tyr Leu Ile Leu Ala Tyr Leu Cys Tyr Leu Ser Leu Cys Phe
595 600 605

Gly Arg Ala Ser Gly Tyr Pro Leu Arg Pro Val Leu Pro Ser Gln Ser
610 615 620

Tyr Leu Gln Ala Gly Trp Asp Val Leu Ser Lys Ala Gln Val Ala Pro
625 630 635 640

Phe Ala Leu Ile Phe Phe Ile Cys Cys Tyr Leu Arg Cys Arg Leu Arg
645 650 655

Tyr Ala Ala Leu Leu Gly Phe Val Pro Met Ala Ala Gly Leu Pro Leu
660 665 670

Thr Phe Phe Val Ala Ala Ala Ala Gln Pro Asp Tyr Asp Trp Trp
675 680 685

Val Arg Leu Leu Val Ala Gly Leu Val Leu Trp Ala Gly Arg Asn Arg
690 695 700

Gly His Arg Ile Ala Leu Leu Val Gly Pro Trp Pro Leu Val Ala Leu
705 710 715 720

Leu Thr Leu Leu His Leu Val Thr Pro Ala Ser Ala Phe Asp Thr Glu
725 730 735

Ile Ile Gly Gly Leu Thr Ile Pro Pro Val Val Ala Leu Val Val Met
740 745 750

Ser Arg Phe Gly Phe Ala His Leu Leu Pro Arg Cys Ala Leu Val
755 760 765

Asn Ser Tyr Leu Trp Gln Arg Trp Glu Asn Trp Phe Trp Asn Val Thr
770 775 780

Leu Arg Pro Glu Arg Phe Phe Leu Val Leu Val Cys Phe Pro Gly Ala
785 790 795 800

Thr Tyr Asp Ala Leu Val Thr Phe Cys Val Cys His Val Ala Leu Leu
805 810 815

Cys Leu Thr Ser Ser Ala Ala Ser Phe Phe Gly Thr Asp Ser Arg Val
820 825 830

Arg Ala His Arg Met Leu Val Arg Leu Gly Lys Cys His Ala Trp Tyr
835 840 845

Ser His Tyr Val Leu Lys Phe Phe Leu Leu Val Phe Gly Glu Asn Gly
850 855 860

Val Phe Phe Tyr Lys His Leu His Gly Asp Val Leu Pro Asn Asp Phe
865 870 875 880

Ala Ser Lys Leu Pro Leu Gln Glu Pro Phe Phe Pro Phe Glu Gly Lys
885 890 895

Ala Arg Val Tyr Arg Asn Glu Gly Arg Arg Leu Ala Cys Gly Asp Thr
900 905 910

Val Asp Gly Leu Pro Val Val Ala Arg Leu Gly Asp Leu Val Phe Ala
915 920 925

Gly Leu Ala Met Pro Pro Asp Gly Trp Ala Ile Thr Ala Pro Phe Thr
930 935 940

Leu Gln Cys Leu Ser Glu Arg Gly Thr Leu Ser Ala Met Ala Val Val
945 950 955 960

Met Thr Gly Ile Asp Pro Arg Thr Trp Thr Gly Thr Ile Phe Arg Leu
965 970 975

Gly Ser Leu Ala Thr Ser Tyr Met Gly Phe Val Cys Asp Asn Val Leu
980 985 990

Tyr Thr Ala His His Gly Ser Lys Gly Arg Arg Leu Ala His Pro Thr
995 1000 1005

Gly Ser Ile His His Pro Ile Thr Val Asp Ala Ala Asn Asp Gln Asp Ile
1010 1015 1020

Tyr Gln Pro Pro Cys Gly Ala Gly Ser Leu Thr Arg Cys Ser Cys Gly
1025 1030 1035 1040

Glu Thr Lys Gly Tyr Leu Val Thr Arg Leu Gly Ser Leu Val Glu Val
1045 1050 1055

Asn Lys Ser Asp Asp Pro Tyr Trp Cys Val Cys Gly Ala Leu Pro Met
1060 1065 1070

Ala Val Ala Lys Gly Ser Ser Gly Ala Pro Ile Leu Cys Ser Ser Gly
1075 1080 1085

His Val Ile Gly Met Phe Thr Ala Ala Arg Asn Ser Gly Gly Ser Val
1090 1095 1100

Ser Gln Ile Arg Val Arg Pro Leu Val Cys Ala Gly Tyr His Pro Gln
1105 1110 1115 1120

Tyr Thr Ala His Ala Thr Leu Asp Thr Lys Pro Thr Val Pro Asn Glu
1125 1130 1135

Tyr Ser Val Gln Ile Leu Ile Ala Pro Thr Gly Ser Gly Lys Ser Thr
1140 1145 1150

Lys Leu Pro Leu Ser Tyr Met Gln Glu Lys Tyr Glu Val Leu Val Leu
1155 1160 1165

Asn Pro Ser Val Ala Thr Thr Ala Ser Met Pro Lys Tyr Met His Ala
1170 1175 1180

Thr Tyr Gly Val Asn Pro Asn Cys Tyr Phe Asn Gly Lys Cys Thr Asn
1185 1190 1195 1200

Thr Gly Ala Ser Leu Thr Tyr Ser Thr Tyr Gly Met Tyr Leu Thr Gly
1205 1210 1215

Ala Cys Ser Arg Asn Tyr Asp Val Ile Ile Cys Asp Glu Cys His Ala
1220 1225 1230

Thr Asp Ala Thr Thr Val Leu Gly Ile Gly Lys Val Leu Thr Glu Ala
1235 1240 1245

Pro Ser Lys Asn Val Arg Leu Val Val Leu Ala Thr Ala Thr Pro Pro
1250 1255 1260

Gly Val Ile Pro Thr Pro His Ala Asn Ile Thr Glu Ile Gln Leu Thr
1265 1270 1275 1280

Asp Glu Gly Thr Ile Pro Phe His Gly Lys Lys Ile Lys Glu Glu Asn
1285 1290 1295

Leu Lys Lys Gly Arg His Leu Ile Phe Glu Ala Thr Lys Lys His Cys
1300 1305 1310

Asp Glu Leu Ala Asn Glu Leu Ala Arg Lys Gly Ile Thr Ala Val Ser
1315 1320 1325

Tyr Tyr Arg Gly Cys Asp Ile Ser Lys Ile Pro Glu Gly Asp Cys Val
1330 1335 1340

Val Val Ala Thr Asp Ala Leu Cys Thr Gly Tyr Thr Gly Asp Phe Asp
1345 1350 1355 1360

Ser Val Tyr Asp Cys Ser Leu Met Val Glu Gly Thr Cys His Val Asp
1365 1370 1375

Leu Asp Pro Thr Phe Thr Met Gly Val Arg Val Cys Gly Val Ser Ala
1380 1385 1390

Ile Val Lys Gly Gln Arg Arg Gly Arg Thr Gly Arg Gly Arg Ala Gly
1395 1400 1405

Ile Tyr Tyr Tyr Val Asp Gly Ser Cys Thr Pro Ser Gly Met Val Pro
1410 1415 1420

Glu Cys Asn Ile Val Glu Ala Phe Asp Ala Ala Lys Ala Trp Tyr Gly
1425 1430 1435 1440

Leu Ser Ser Thr Glu Ala Gln Thr Ile Leu Asp Thr Tyr Arg Thr Gln
1445 1450 1455

Pro Gly Leu Pro Ala Ile Gly Ala Asn Leu Asp Glu Trp Ala Asp Leu
1460 1465 1470

Phe Ser Met Val Asn Pro Glu Pro Ser Phe Val Asn Thr Ala Lys Arg
1475 1480 1485

Thr Ala Asp Asn Tyr Val Leu Leu Thr Ala Ala Gln Leu Gln Leu Cys
1490 1495 1500

His Gln Tyr Gly Tyr Ala Ala Pro Asn Asp Ala Pro Arg Trp Gln Gly
1505 1510 1515 1520

Ala Arg Leu Gly Lys Lys Pro Cys Gly Val Leu Trp Arg Leu Asp Gly
1525 1530 1535

Ala Asp Ala Cys Pro Gly Pro Glu Pro Ser Glu Val Thr Arg Tyr Gln
1540 1545 1550

Met Cys Phe Thr Glu Val Asn Thr Ser Gly Thr Ala Ala Leu Ala Val
1555 1560 1565

Gly Val Gly Val Ala Met Ala Tyr Leu Ala Ile Asp Thr Phe Gly Ala
1570 1575 1580

Thr Cys Val Arg Arg Cys Trp Ser Ile Thr Ser Val Pro Thr Gly Ala
1585 1590 1595 1600

Thr Val Ala Pro Val Val Asp Glu Glu Glu Ile Val Glu Glu Cys Ala
1605 1610 1615

Ser Phe Ile Pro Leu Glu Ala Met Val Ala Ala Ile Asp Lys Leu Lys
1620 1625 1630

Ser Thr Ile Thr Thr Ser Pro Phe Thr Leu Glu Thr Ala Leu Glu
1635 1640 1645

Lys Leu Asn Thr Phe Leu Gly Pro His Ala Ala Thr Ile Leu Ala Ile
1650 1655 1660

Ile Glu Tyr Cys Cys Gly Leu Val Thr Leu Pro Asp Asn Pro Phe Ala
1665 1670 1675 1680

Ser Cys Val Phe Ala Phe Ile Ala Gly Ile Thr Thr Pro Leu Pro His
1685 1690 1695

Lys Ile Lys Met Phe Leu Ser Leu Phe Gly Gly Ala Ile Ala Ser Lys
1700 1705 1710

Leu Thr Asp Ala Arg Gly Ala Leu Ala Phe Met Met Ala Gly Ala Ala
1715 1720 1725

Gly Thr Ala Leu Gly Thr Trp Thr Ser Val Gly Phe Val Phe Asp Met
1730 1735 1740

Leu Gly Gly Tyr Ala Ala Ala Ser Ser Thr Ala Cys Leu Thr Phe Lys
1745 1750 1755 1760

Cys Leu Met Gly Glu Trp Pro Thr Met Asp Gln Leu Ala Gly Leu Val
1765 1770 1775

Tyr Ser Ala Phe Asn Pro Ala Ala Gly Val Val Gly Val Leu Ser Ala
1780 1785 1790

Cys Ala Met Phe Ala Leu Thr Thr Ala Gly Pro Asp His Trp Pro Asn
1795 1800 1805

Arg Leu Leu Thr Met Leu Ala Arg Ser Asn Thr Val Cys Asn Glu Tyr
1810 1815 1820

Phe Ile Ala Thr Arg Asp Ile Arg Arg Lys Ile Leu Gly Ile Leu Glu
1825 1830 1835 1840

Ala Ser Thr Pro Trp Ser Val Ile Ser Ala Cys Ile Arg Trp Leu His
1845 1850 1855

Thr Pro Thr Glu Asp Asp Cys Gly Leu Ile Ala Trp Gly Leu Glu Ile
1860 1865 1870

Trp Gln Tyr Val Cys Asn Phe Phe Val Ile Cys Phe Asn Val Leu Lys
1875 1880 1885

Ala Gly Val Gln Ser Met Val Asn Ile Pro Gly Cys Pro Phe Tyr Ser
1890 1895 1900

Cys Gln Lys Gly Tyr Lys Gly Pro Trp Ile Gly Ser Gly Met Leu Gln
1905 1910 1915 1920

Ala Arg Cys Pro Cys Gly Ala Glu Leu Ile Phe Ser Val Glu Asn Gly
1925 1930 1935

Phe Ala Lys Leu Tyr Lys Gly Pro Arg Thr Cys Ser Asn Tyr Trp Arg
1940 1945 1950

Gly Ala Val Pro Val Asn Ala Arg Leu Cys Gly Ser Ala Arg Pro Asp
1955 1960 1965

Pro Thr Asp Trp Thr Ser Leu Val Val Asn Tyr Gly Val Arg Asp Tyr
1970 1975 1980

Cys Lys Tyr Glu Lys Met Gly Asp His Ile Phe Val Thr Ala Val Ser
1985 1990 1995 2000

Ser Pro Asn Val Cys Phe Thr Gln Val Pro Pro Thr Leu Arg Ala Ala
2005 2010 2015

Val Ala Val Asp Gly Val Gln Val Gln Cys Tyr Leu Gly Glu Pro Lys
2020 2025 2030

Thr Pro Trp Thr Thr Ser Ala Cys Cys Tyr Gly Pro Asp Gly Lys Gly
2035 2040 2045

Lys Thr Val Lys Leu Pro Phe Arg Val Asp Gly His Thr Pro Gly Val
2050 2055 2060

Arg Met Gln Leu Asn Leu Arg Asp Ala Leu Glu Thr Asn Asp Cys Asn
2065 2070 2075 2080

Ser Thr Asn Asn Thr Pro Ser Asp Glu Ala Ala Val Ser Ala Leu Val
2085 2090 2095

Phe Lys Gln Glu Leu Arg Arg Thr Asn Gln Leu Leu Glu Ala Ile Ser
2100 2105 2110

Ala Gly Val Asp Thr Thr Lys Leu Pro Ala Pro Ser Ile Glu Glu Val
2115 2120 2125

Val Val Arg Lys Arg Gln Phe Arg Ala Arg Thr Gly Ser Leu Thr Leu
2130 2135 2140

Pro Pro Pro Pro Arg Ser Val Pro Gly Val Ser Cys Pro Glu Ser Leu
2145 2150 2155 2160

Gln Arg Ser Asp Pro Leu Glu Gly Pro Ser Asn Leu Pro Pro Ser Pro
2165 2170 2175

Pro Val Leu Gln Leu Ala Met Pro Met Pro Leu Leu Gly Ala Gly Glu
2180 2185 2190

Cys Asn Pro Phe Thr Ala Ile Gly Cys Ala Met Thr Glu Thr Gly Gly
2195 2200 2205

Gly Pro Asp Asp Leu Pro Ser Tyr Pro Pro Lys Lys Glu Val Ser Glu
2210 2215 2220

Trp Ser Asp Glu Ser Trp Ser Thr Ala Thr Thr Ala Ser Ser Tyr Val
2225 2230 2235 2240

Thr Gly Pro Pro Tyr Pro Lys Ile Arg Gly Lys Asp Ser Thr Gln Ser
2245 2250 2255

Ala Pro Ala Lys Arg Pro Thr Lys Lys Lys Leu Gly Lys Ser Glu Phe
2260 2265 2270

Ser Cys Ser Met Ser Tyr Thr Trp Thr Asp Val Ile Ser Phe Lys Thr
2275 2280 2285

Ala Ser Lys Val Leu Ser Ala Thr Arg Ala Ile Thr Ser Gly Phe Leu
2290 2295 2300

Lys Gln Arg Ser Leu Val Tyr Val Thr Glu Pro Arg Asp Ala Glu Leu
2305 2310 2315 2320

Arg Lys Gln Lys Val Thr Ile Asn Arg Gln Pro Leu Phe Pro Pro Ser
2325 2330 2335

Tyr His Lys Gln Val Arg Leu Ala Lys Glu Lys Ala Ser Lys Val Val
2340 2345 2350

Gly Val Met Trp Asp Tyr Asp Glu Val Ala Ala His Thr Pro Ser Lys
2355 2360 2365

Ser Ala Lys Ser His Ile Thr Gly Leu Arg Gly Thr Asp Val Arg Ser
2370 2375 2380

Gly Ala Ala Arg Lys Ala Val Leu Asp Leu Gln Lys Cys Val Glu Ala
2385 2390 2395 2400

Gly Glu Ile Pro Ser His Tyr Arg Gln Thr Val Ile Val Pro Lys Glu
2405 2410 2415

Glu Val Phe Val Lys Thr Pro Gln Lys Pro Thr Lys Lys Pro Pro Arg
2420 2425 2430

Leu Ile Ser Tyr Pro His Leu Glu Met Arg Cys Val Glu Lys Met Tyr
2435 2440 2445

Tyr Gly Gln Val Ala Pro Asp Val Val Lys Ala Val Met Gly Asp Ala
2450 2455 2460

Tyr Gly Phe Val Asp Pro Arg Thr Arg Val Lys Arg Leu Leu Ser Met
2465 2470 2475 2480

Trp Ser Pro Asp Ala Val Gly Ala Thr Cys Asp Thr Val Cys Phe Asp
2485 2490 2495

Ser Thr Ile Thr Pro Glu Asp Ile Met Val Glu Thr Asp Ile Tyr Ser
2500 2505 2510

Ala Ala Lys Leu Ser Asp Gln His Arg Ala Gly Ile His Thr Ile Ala
2515 2520 2525

Arg Gln Leu Tyr Ala Gly Gly Pro Met Ile Ala Tyr Asp Gly Arg Glu
2530 2535 2540

Ile Gly Tyr Arg Arg Cys Arg Ser Ser Gly Val Tyr Thr Thr Ser Ser
2545 2550 2555 2560

Ser Asn Ser Leu Thr Cys Trp Leu Lys Val Asn Ala Ala Ala Glu Gln
2565 2570 2575

Ala Gly Met Lys Asn Pro Arg Phe Leu Ile Cys Gly Asp Asp Cys Thr
2580 2585 2590

Val Ile Trp Lys Ser Ala Gly Ala Asp Ala Asp Lys Gln Ala Met Arg
2595 2600 2605

Val Phe Ala Ser Trp Met Lys Val Met Gly Ala Pro Gln Asp Cys Val
2610 2615 2620

Pro Gln Pro Lys Tyr Ser Leu Glu Glu Leu Thr Ser Cys Ser Ser Asn
2625 2630 2635 2640

Val Thr Ser Gly Ile Thr Lys Ser Gly Lys Pro Tyr Tyr Phe Leu Thr
2645 2650 2655

Arg Asp Pro Arg Ile Pro Leu Gly Arg Cys Ser Ala Glu Gly Leu Gly
2660 2665 2670

Tyr Asn Pro Ser Ala Ala Trp Ile Gly Tyr Leu Ile His His Tyr Pro
2675 2680 2685

Cys Leu Trp Val Ser Arg Val Leu Ala Val His Phe Met Glu Gln Met
2690 2695 2700

Leu Phe Glu Asp Lys Leu Pro Glu Thr Val Thr Phe Asp Trp Tyr Gly
2705 2710 2715 2720

Lys Asn Tyr Thr Val Pro Val Glu Asp Leu Pro Ser Ile Ile Ala Gly
2725 2730 2735

Val His Gly Ile Glu Ala Phe Ser Val Val Arg Tyr Thr Asn Ala Glu
2740 2745 2750

Ile Leu Arg Val Ser Gln Ser Leu Thr Asp Met Thr Met Pro Pro Leu
2755 2760 2765

Arg Ala Trp Arg Lys Lys Ala Arg Ala Val Leu Ala Ser Ala Lys Arg
2770 2775 2780

Arg Gly Gly Ala His Ala Lys Leu Ala Arg Phe Leu Leu Trp His Ala
2785 2790 2795 2800

Thr Ser Arg Pro Leu Pro Asp Leu Asp Lys Thr Ser Val Ala Arg Tyr
2805 2810 2815

Thr Thr Phe Asn Tyr Cys Asp Val Tyr Ser Pro Glu Gly Asp Val Phe
 2820 2825 2830

Ile Thr Pro Gln Arg Arg Leu Gln Lys Phe Leu Val Lys Tyr Leu Ala
 2835 2840 2845

Val Ile Val Phe Ala Leu Gly Leu Ile Ala Val Gly Leu Ala Ile Ser
 2850 2855 2860

<210> 3

<211> 9139

<212> DNA

<213> GBV-B virus

<400> 3

accacaaaca ctccagtttgc ttacactccg ctaggaatgc tcctggagca ccccccttag 60
 cagggcggtgg gggatttccc ctgcccgtct gcagaagggt ggagccaaacc accttagtat 120
 gtaggcggcg ggactcatga cgctcgcgtg atgacaagcg ccaagcttga cttggatggc 180
 cctgatgggc gttcatgggt tcgggtgggg tggcgcttta ggcagcctcc acgcccacca 240
 cctcccaagat agagcggcgg cactgttaggg aagaccgggg accggtaact accaaggacg 300
 cagaccttctt ttttagtatac acgcctccgg aagttagttgg gcaagcccac ctatatgtgt 360
 tgggatgggtt ggggttagcc atccataccg tactgcctga tagggtcctt gcgagggat 420
 ctgggatgtct cgttagaccgt agcacatgcc tgttattttct actcaaacaa gtcctgttacc 480
 tgcgcccaga acgcgcaga acaagcagac gcaggcttca tatcctgtgt ccattaaaac 540
 atctgttcaa aggggacaac gagcaaagcg caaatgtccag cgcgatgttc ggcctcgtaa 600
 ttacaaaatt gctggtatcc atgtggctt gcagacatgt gtcaggctg ctttgccagc 660
 tcatggttgg ggacgccaag accctcgcca taagtctcgc aatcttggaa tccttctggaa 720
 ttaccctttg ggggtggattt gtgatgttac aactcacaca cctcttagtag gcccgttgtt 780
 ggcaggagcg gtcgttcgac cagtcgtcca gatagtacgc ttgtggagg atggagtcaa 840
 ctgggtact ggttggttcg gtgtccaccc ttttgggtt gttctgttat ctttggcctg 900
 tccctgttagt gggcgccggg tcactgaccc agacacaaat accacaatcc tgaccaattt 960
 ctgccagcgt aatcaggtta tctattgttc tccttccact tgcctacacg agcctggttt 1020
 tgtgatctgt gcgacgagt gctgggttcc cgccaaatccg tacatctcac acccttccaa 1080
 ttggactggc acggactcct tcctggctga ccacattgtat tttttatgg gcgctttgt 1140
 gacctgtgac gcccgtaca ttgggtgagtt gtgtgggtcg tttgttattttg tgggtgactg 1200
 gcttgcagg cactggctta ttcacataga cctcaatgaa actggtaactt gttacctggaa 1260
 agtgcactt ggaatagatc ctgggttccct agggtttatac ggggtggatgg ccggcaaggt 1320
 cgaggctgtc atcttcttgc ccaaactggc ttcacaagta ccatacgtca ttgcgactat 1380
 gtttagcagt gtacactacc tggcggttgg cgctctgatc tactatgcct ctcggggcaa 1440
 gtggatctgt ttgtctctgt cgctttagtgc ttacatagaa ggcacactcg gaaacccat 1500
 cagggtgccc actggatgtc caatagctga gttttgctcg ctttgcgttga taccatgtcc 1560
 ttgccactt tatttggatgtc agaatgtgtc agaagtgcatt ttacatggac caaagtggac 1620
 caggcctatc actcttagagt ataacaactc catatcttgg taccctata caatccctgg 1680
 tgcgagggaa tgtatggta aattcaaaaa taacacatgg ggttgctgcc gtattcgcaa 1740

tgtgccatcg tactgcacta tgggcaactga tgcagtgtgg aacgacactc gcaacactta 1800
cgaagcatgc ggtgtAACAC catggctaac aaccgcattgg cacaacggct cagccctgaa 1860
attggctata ttacaataacc ctgggtctaa agaaatgttt aaacctata attggatgtc 1920
aggccatTTG tattttgagg gatcagatac ccctatagtt tacttttatg accctgtgaa 1980
ttccactctc ctaccaccgg agaggtggc taggttgc ccc ggtacccac ctgtggtag 2040
tggttcttgg ttacagggttc cgcaagggtt ttacagtgtat gtgaaagacc tagccacagg 2100
attgatcacc aaagacaaag cctggaaaaa ttatcaggtc ttatattccg ccacgggtgc 2160
tttgtctctt acgggagttt ccaccaaggc cgtgggtcta attctgtgg ggttgtgtgg 2220
cagcaagtat ctatTTT tag cctacctctg ttacttgcc ctttggTTT ggccgccttc 2280
tggttaccct ttgcgtcctg tgctcccattc ccagtcgtat ctccaagctg gctggatgt 2340
tttgtctaaa gctcaagtag ctccTTT gc tttgattttc ttcatctgtt gctatctccg 2400
ctgcaggctt cgttatgctg cccttttagg gtttggccc atggctgcgg gcttggccct 2460
aactttcttt gtgcagcag ctgctgccc accagattat gactgggtgg tgcgactgt 2520
agtggcaggg tttagTTT gggccggccg taaccgtggt caccgcata ctctgctt 2580
aggtccttgg cctctggtag cgcttttaac cctcttgcatttggttacgc ctgcttcagc 2640
tttgataacc gagataattt gagggtgtac aataccacct gtagtagcat tagttgtcat 2700
gtctcgTTT ggcttctttt ctcaTTT acctcgctgt gctttagtta actcctatct 2760
ttggcaacgt tgggagaatt ggtttggaa cgTTT acacta agaccggaga ggttttccct 2820
tgtgctgggtt tggTTTccccg gtgcgacata tgacgcgtg gtgactttct gtgtgtgtca 2880
cgtagctctt ctatgtttaa catccagtgc agcatcgTTT tttggactg actcttaggg 2940
tagggcccat agaatgttgg tgcgtctcg aaagtgtcat gcttggtatt ctcatTTT 3000
tcttaagtt ttcctttag tggTTTggta gaatgggtgt ttttctata agcacttgca 3060
tggtgatgtc ttgcctaATG atTTTgcCTC gaaactacca ttgcaagagc catTTTccc 3120
ttttgaaggc aaggcaaggg tctataggaa tgaaggaaga cgcttggcgt gtggggacac 3180
ggttgatgg tggcccgtt tgcgcgtt cggcgacctt gtttgcag ggttgctat 3240
gccGCCAGAT gggTgggcca ttaccgcacc tttacgctg cagtgtctct ctgaacgtgg 3300
cacgctgtca gcatggcag tggTCatgac tggTataagac ccccgaaactt ggactggaaac 3360
tatTTTcaga ttaggatctc tggccactag ctacatggga tttgtttgtt acaacgtgtt 3420
gtatactgct caccatggca gcaaggggcg ccggTTggct catcccacag gctctataca 3480
cccaataacc gttgacgcgg ctaatgacca ggacatctat caaccacccat gtggagctgg 3540
gtcccttact cgtgctctt cgggggagac caaggggtat ctggtaacac gactggggc 3600
attgggttag gtcacAAAT ccgatgaccc ttattgggtgt gtgtgcgggg cccttcccat 3660
ggctgttgcc aagggttctt caggtggccc gattctgtgc tcctccggc atgttattgg 3720
gatgttccacc gctgctagaa attctggcgg ttcagtcagt cagattaggg ttagggcgtt 3780
gggtgtgtgtt ggataccatc cccagTACAC agcacatgcc actcttgata caaaacctac 3840
tgtgcctaAC gaggattcag tgcaaatttt aattggcccc actggcagcg gcaagtcaac 3900
caaattacca ctTtcttaca tgcaggagaa gtatgaggtc ttggTcctaa atcccagtgt 3960
ggctacaaca gcatcaatgc caaagtacat gcacgcgacg tacggcgtga atccaaattt 4020
ctatTTTaaT ggcaaatgtt ccaacacagg ggcttcactt acgtacagca catatggcat 4080
gtacctgacc ggagcatgtt cccggaaacta tgatgtaaatc atttgcacg aatgcctatgc 4140
taccgtatgc accaccgtgt tggcattgg aaaggtccta accgaagctc catccaaaaa 4200
tgttaggcta gtggTTCTTG ccacggctac ccccccTTGA gtaatcccta caccacatgc 4260
caacataact gagattcaat taaccgtatgc aggcaactatc ccctttcatg gaaaaaaagat 4320
taaggagggaa aatctgaaga aaggagaca ctttatTTT gaggctacca aaaaacactg 4380
tgatgagctt gtcacacgt tagctcgaaa gggataaca gctgtctttt actatagggg 4440
atgtgacatc tcaaaaatcc ctgagggcga ctgtgttagta gttgccactg atgccttgc 4500
tacagggtac actgggtact ttgatccgt gtatgactgc agcctcatgg tagaaggc 4560
atgcctatgtt gacccTgacc ctactttcac catgggtgtt cgtgtgtgcg gggTTTcagc 4620

aatagttaaa ggccagcgta ggggccgcac aggccgtggg agagctggca tatactacta 4680
tgttagacggg agttgtaccc ctccgggtat gttcctgaa tgcaacattt ttgaagcctt 4740
cgacgcagcc aaggcatggt atggttgtc atcaacagaa gctcaaacta ttctggacac 4800
ctatcgacc caacctgggt tacctgcgtt aggagcaat ttggacgagt gggctgatct 4860
cttttctatg gtcaaccccg aacccattt tgtcaatact gaaaaagaa ctgctgacaa 4920
ttatgttttggt tgactgcag cccaaactaca actgtgtcat cagtagtggct atgctgtcc 4980
caatgacgca ccacgggtggc agggagcccg gcttggaaa aaaccttggc gggttctgtg 5040
gcccgttggac ggcgctgacg cctgtctgg cccagagccc agcgagggtga ccagatacca 5100
aatgtgcttc actgaagtca atacttctgg gacagccgca ctcgcgtttt gcgttggagt 5160
ggctatggct tatctagcca ttgacacttt tggcgccact tgggtgcggc gttgctggc 5220
tattacatca gtcccttaccg gtgctactgt cccccccagtg gttgacgaaag aagaaatcgt 5280
ggaggagtgt gcatcattca ttcccttggg ggcattgggt gctgcattt acaagctgaa 5340
gagtacaatc accacaacta gtccttcac attggaaacc gcccttggaaa aacttaaacac 5400
ctttcttggg cctcatgcag ctacaatctt tgctatcata gagtattgct gtggtttagt 5460
cactttaccc gacaatccct ttgcattcatg cgtgtttgtt ttcatttgcgg gtattactac 5520
cccactaccc cacaagatca aaatgttccct gtcatttattt ggaggcgaa ttgcgtccaa 5580
gcttacagac gctagaggcg cactggcggt catgatggcc gggctgcgg gaacagctct 5640
tggcacatgg acatcggtgg gtttgcattt tgacatgcta ggcggctatg ctggccgcctc 5700
atccactgtc tgcttgcacat taaaatgtt gatgggttag tggcccaacta tggatcagct 5760
tgctggtttgcgttactcccg cgttcaatcc ggcggcaggaa gttgtggcg tcttgcagc 5820
ttgtgcaatg tttgttttgcgtt caacagcagg gccagatcac tggcccaaca gacttcttac 5880
tatgttgcgtt aggagcaaca ctgtatgtaa tgtagtactttt attggccactc gtgacatccg 5940
caggaagata ctgggcattt tggaggcatc tacccttgg agtgcataat cagcttgcac 6000
ccggttggcgtc cacaccccgaa cggaggatga ttgcggccctc attgttggg gtcttagagat 6060
ttggcagtat gtgtgcattt tctttgtat ttgtttaat gtccttaat gtcggagttca 6120
gagcatgggtt aacatttccgt gttgtccctt ctacagctgc cagaagggggt acaagggccc 6180
ctggatttggaa tcaggatgc tccaaagcacg ctgtccatgc ggtgcgttca acatctttc 6240
tgttgagaat ggttttgcgtt aactttacaa aggaccaga acttgcattttaaatttggag 6300
agggggctgtt ccagtcaacg cttaggcgtt ggggtcggtt agaccggacc caactgatttgc 6360
gactagtctt gtcgtcaattt atggcgttag ggactactgt aaatatgaga aaatgggaga 6420
tcacatccccgtt gttacagcag ttccttcctcc aaatgtctgt ttcacccagg tgcccccaac 6480
cttgagagct gcagtggcccg tggacggcgtt acagggttcag tggatcttgcgttgc 6540
aactcccttgg acgacatctg ctgttgcgtt ccgttgcgttgc ggttgcgttgc 6600
gcttcccttc cgcgttgcgtt gtcacacacc tgggtgcgc atgcacttta atttgcgtga 6660
tgcacttgcgtt gcaatgcactt gtaattccac aaacaacact ccttagtgcgttgc aagccgcagt 6720
gtccgccttctt gtttcaacac aggatgtgcgtt ccgttgcgttgc ggttgcgttgc 6780
agctggcggtt gacaccacca aactgcaccccccctccatc gaagaggtag tggtaagaaaa 6840
gcgcgcgttc cgggcaggaa ctgggtcggtt taccttgcgtt cccttccgtt gatccgtccc 6900
aggaggtgtca tggcctgaaa gcttgcgttgc aagtgcacccgg ttagaagggtc cttcaacactt 6960
ccctcccttca ccacccgttgcgtt tacagttggc catgcgttgcgtt cccttgcgttgc gggccgttgc 7020
gtgttgcgttgc ttcacttgcgtt ttggatgtgc aatgaccgaa acaggcgagg gcccgttgc 7080
tttacccaggatccatca aaaaggaggt ctctgttgcgttgc ttagaagggtc cttcaacactt 7140
ggcttccaccc gcttcccgatc acgttactgg ccccccgttgcgttgc cttcaacactt gggggaaaggaa 7200
ttccacttgcgttgc ttagcccccgg cccaaacccggcc tacaatggaa aagtggggaa agagttgttgc 7260
ttcgttgcgttgc atgagctaca cctggacccgg cgttgcgttgc ttcggatgtgc tttcaacactt 7320
tctgttgcgttgc aactcggccca tcaacttgcgttgc tttcaacactt gggccgttgc 7380
gacttgcgttgc cgggttgcgttgc agcttgcgttgc acaaaaaagtc acttataata gacaacccctc 7440
gttccccccca tcataccacca agcaagttgttgcgttgc ttagaagggtc cttcaacactt 7500

cgggtgtcatg tgggactatg atgaagttagc agctcacacg ccctctaagt ctgctaagtc 7560
 ccacatcaact ggccttcggg gcactgtatgt tcgttctgga gcagcccgca aggctgtct 7620
 ggacttgcag aagtgtgtcg aggcaggta gataccgagt cattatcgcc aaactgtgat 7680
 agttccaaag gaggaggatct tcgtgaagac cccccagaaa ccaacaaaga aacccccaag 7740
 gcttatctcg tacccccacc ttgaaatgag atgtgttgag aagatgtact acggtcaggt 7800
 tgctcctgac gtagttaaag ctgtcatggg agatgcgtac gggttttagt atccacgtac 7860
 ccgtgtcaag cgtctgttgt cgatgtggc acccgatgca gtcggagcca catgcgatac 7920
 agtgtgtttt gacagttacca tcacacccga ggatatcatg gtggagacag acatctactc 7980
 agcagctaaa ctcagtgacc aacaccgagc tggcattcac accattgcga ggcagttata 8040
 cgctggagga ccgatgatcg cttatgatgg ccgagagatc ggatatcgta ggttaggtc 8100
 ttccggcgtc tatactacct caagttccaa cagtttgacc tgctggctga aggtaaatgc 8160
 tgcagccgaa caggctggca tgaagaaccc tcgcttcctt atttcgccg atgattgcac 8220
 cgtaatttgg aagagcgccg gagcagatgc agacaaacaa gcaatgcgtg tctttcttag 8280
 ctggatgaag gtgatgggtg caccacaaga ttgtgtgcct caacccaaat acagtttgg 8340
 agaattaaca tcatgctcat caaatgttac ctctggaaatt accaaaatgt gcaagccta 8400
 ctactttctt acaagagatc ctcgtatccc ctttggcagg tgctctgccc agggcttggg 8460
 atacaacccc agtgctgcgt ggattggta tctaatacat cactacccat gtttgggt 8520
 tagccgtgtg ttggctgtcc atttcatgga gcagatgctc tttgaggaca aacttccca 8580
 gactgtgacc tttgactggt atggaaaaaa ttatacggtg cctgtagaag atctgcccag 8640
 catcattgtct ggtgtcaccg gtattgaggc tttctcggtg gtgcgtaca ccaacgctga 8700
 gatcctcaga gtttccaaat cactaacaga catgaccatg ccccccctgc gagcctggcg 8760
 aaagaaaagcc agggcggtcc tcgccagcgc caagaggcgt ggcggagcac acgcaaaatt 8820
 ggctcgcttc cttctctggc atgctacatc tagacctcta ccagatttg ataagacgag 8880
 cgtggctcgg tacaccactt tcaattattt tgatgtttac tccccggagg gggatgtgtt 8940
 tattacacca cagagaagat tgcagaagtt cttgtgaag tatttggctg tcattgtttt 9000
 tgccctaggg ctcattgctg ttggatttagc catcagctga acccccaaat tcaaaaattaa 9060
 ctaacagtt tttttttt tttttttt agggcagcgg caacagggga gacccgggc 9120
 ttaacgaccc cgcgatgtg 9139

<210> 4
 <211> 9711
 <212> DNA
 <213> Hepatitis C virus

<400> 4

acccgccct aataggggcg acactccgcc atgaatcaact cccctgtgag gaactactgt 60
 cttcacgcag aaagcgtcta gccatggcgt tagtatgagt gtcgtacagc ctccaggccc 120
 ccccccctcccg ggagagccat agtggctcgc ggaaccgggtg agtacaccgg aattgcccgg 180
 aagactgggt ctttcttgg ataaacccac tctatgccc gccatttggg cgtgcccccg 240
 caagactgtc agccgagtag cgttgggttgc gaaaaaggcct tgtggtaactg cctgataaggg 300
 tgcttgcag tgccccggga ggtctcgtag accgtgcacc atgagcacaa atcctaaacc 360
 tcaaaagaaaa accaaaagaa acaccaaccg tcgcccacaa gacgtaagt ttccggcgg 420
 cggccagatc gttggcggag tatacttggt gccgcgcagg ggccccaggt tgggtgtgcg 480
 cgcgacaagg aagacttcgg agcggtccca gccacgtgga aggcgccagc ccattccctaa 540
 agatcggcgc tccactggca aatcctgggg aaaaccagga taccctggc ccctatacgg 600
 gaatgagggga ctcggctggg caggatggct cctgtccccc cgaggttccc gtccctttt 660
 gggccccaat gaccccccggc ataggcgcg caacgtgggt aaggtcatcg ataccctaac 720

gtgcggctt gccgacctca tgggtacat ccctgtcgtg ggcgccccgc tcggcggcgt 780
 cgccagagct ctcgcgcatg gcgtgagagt cctggaggac ggggttaatt ttgcaacagg 840
 gaacttaccc gggttcttcttttatctt cttgctggcc ctgctgtcct gcatcaccac 900
 cccggctcc gctgccgaag tgaagaacat cagtaccggc tacatggtga ctaacgactg 960
 caccaatgac agcattaccc ggcagctcca ggctgctgtc ctccacgtcc ccgggtgcgt 1020
 cccgtgcgag aaagtggga atgcatctca gtgctggata ccggcttcac cgaatgtggc 1080
 cgtcagcgg cccggcgccc tcacgcaggg cttgcggacg cacatcgaca tggttgtat 1140
 gtccgcccacg ctctgtctg ccctctacgt gggggacctc tgccgtgggg ttagtgcgtc 1200
 agcccaaatg ttcattgtct cgcgcagca ccactggttt gtccaaagact gcaattgtc 1260
 catctaccct ggtaccatca ctggacacccg catggcatgg gacatgatga tgaactggc 1320
 gcccacggct accatgatct tggcgtacgc gatgcgtgtc cccgaggtca ttatagacat 1380
 cattagcggg gtcattggg gcgtcatgtt cggcttgcc tacttctcta tgcagggagc 1440
 gtggcgaaa gtcgttgtca tccttctgtt gggccgggg gtggacgcgc gcaccatac 1500
 tttttttttt tctgcgcgc agaccacccg ggcctcacc agcttattt acatggccc 1560
 caggcagaaa atccagctcg ttaacaccaa tggcagctgg cacatcaacc gcaccgcct 1620
 gaactgcaat gactccttgc acaccggctt tatacgctct ctgttctaca cccacagctt 1680
 caactcgtaa ggtatgtcccg aacgcattgtc cgcctgcgc agtatacgagg cttccgggt 1740
 gggatggggc gcctgcaat atgaggataa tgtcaccaat ccagaggata ttagacccta 1800
 ttgcgtggcac taccaccaa ggcagtgtgg cgtggctcctc gccaagactg tttgtggccc 1860
 agtgtactgt ttcaccccca gcccagtggt agtgggcacg accgacaggc ttggagcgcc 1920
 cacttacacg tggggggaga atgagacaga tgtttctta ttgaacagca ctcgaccacc 1980
 gctgggtca tggttcggct gcacgtggat gaactttctt ggctacacca agacttgcgg 2040
 cgcaccaccc tggcgacta gagctgactt caacgcgc acggacactgt tttgtggccc 2100
 ggactgtttt aggaagcatc ctgataccac ttacctcaaa tgcggctctg ggccctggct 2160
 cacgccaagg tgcctgatcg actaccctta caggctctgg cattaccctt gcacagttaa 2220
 ctataccatc ttcaaaataa ggatgtatgt gggaggggtt gagcacaggc tcacggctgc 2280
 atgcaatttc actcggtggg atcggtgcaa cttggaggac agagacagaa gtcaactgtc 2340
 tcctttgtt cactccacca cggaaatgggc cattttacct tgcgttactt cggacctgccc 2400
 cgcctgtcg actggcttc tccaccttca ccaaaacatc gtggacgtac aattcatgtt 2460
 tggcctatca cttgccttca caaaatacat cgtccgatgg gagtggtaa tactttatt 2520
 cctgctctta gcggacgcca gggtttgcgc ctgcttatgg atgctcatct ttttttttcca 2580
 ggccgaagca gcactagaga agctggcat cttgcacgc ggcggcgac ctatgtcaa 2640
 tggcttctta tattttgtca tctttttgtt ggctgcttgg tacatcaagg gtccggtagt 2700
 ccccttagct acctattccc tcactggctt gtggtccttt agcctactgc tccttagcatt 2760
 gccccaaacag gcttatgtt atgacgcatt tgcgtatggc cagataggag cggctctgt 2820
 ggtaatgtatc actctcttta ctctcaccctt cgggtataag acccttctca gcccgttttt 2880
 gtgggtgttg tgctatcttc tgaccctggg ggaagctatg gtccaggagt gggcaccacc 2940
 tatgcagggtg cgcgggtggcc gtgtatggcat catatggcc gtcgcctat tctaccagg 3000
 tttttttttt gacataacca agtggctttt ggcggtgctt gggcctgctt acctcctaaa 3060
 aggtgctttt acgcgcgtgc cgtacttcgt cagggtcac gctctactga ggtatgtgcac 3120
 catggcaagg catctcgccgg ggggcaggtt cgtccagatg ggcgtacttag cccttggcag 3180
 gtggactggc acttacatct atgaccaccc caccctatg tcggattggg ctgttagtgg 3240
 cctgcgggac ctggcggctcg ccgttggagcc tatcatcttc agtccgatgg agaagaaagt 3300
 cattgtctgg ggagcggaga cagctgtttt tggggacatt ttacacggac ttccctgtc 3360
 cggccgactt ggtcggtggg tccctcttgc cccagctgtat ggctatacct ccaaggggtg 3420
 gagtcttctc gccccatca ctgcttacgc ccagcagaca cgtggcttt tgggcaccat 3480
 agtggtgagc atgacggggc ggcacaagac agaacaggct gggaaattc aggtcctgtc 3540
 cacagtcact cagtccttcc tcggaaacatc catctcggtt gttttgtgga ctgtctacca 3600

tggagctggc aacaagactc tggccggctc acggggtccg gtcacgcaga tgtactccag 3660
 tgctgagggg gacttagtag ggtggcccag cccccctggg actaaatctt tggagccgtg 3720
 cacgtgtgga gcggtcgacc tgtacctggt cacgcggAAC gctgatgtca tcccggtcg 3780
 aagacgcggg gacaaacggg gagcgctact ctccccgaga cctctttcca ccttgaaggg 3840
 gtcctcagga ggcccggtgc tatgccccag gggccacgct gtcggagtct tccgggcagc 3900
 tgtgtgctct cggggcgtgg ctaagtcatt agatttcattc cccgttgaga cactcgacat 3960
 cgtcacgcgg tcccccacct ttagtgacaa cagcacacca cctgctgtgc cccagaccta 4020
 tcaggtcggt tacttgcattt ccccgactgg cagtggaaag agcaccaaag ttccctgtcgc 4080
 atatgctgtc caggggtata aagtgttagt gcttaatccc tcagtggtcg ccaccctggg 4140
 gtttggggcg tacttgcata aggcacatgg catcaatccc aacatttagga ctggagtcag 4200
 gactgtgacg accggggcgc ccatcacttta ctccacatata ggcaaattcc tcgcccgtgg 4260
 gggctgtcg ggcggcgcct acgacatcat catatgttat gaatgccatg ccgtggactc 4320
 taccaccatc cttggcatcg gaacagtccct tgatcaagca gagacagctg gggtcagact 4380
 aactgtgtc gctacagctt cccccctgg gtcagtgaca accccccacc ccaacataga 4440
 ggagggtggcc cttggggcagg agggcgagat ccccttctat gggagggcga ttccctgtc 4500
 ttacatcaag ggaggaagac atctgatctt ctgcccattca aagaaaaagt gtgacgagct 4560
 cgcggcggcc cttcggggta tgggcttggaa ctcagtggca tactacagag gtttggacgt 4620
 ctccgtataa ccaactcagg gagacgttgtt ggtcgctcgacc accgacgccc tcatgacagg 4680
 gtatactggg gactttgact ccgtgatcgat ctgcaacgtt gcggtcactc aagttgtaga 4740
 cttcagtttta gaccccacat tcaccataac cacacagatt gtccctcaag acgctgtctc 4800
 acgtagccag cgccggggcgc gcacgggttag ggaagactg ggcatttata ggtatgttcc 4860
 cactggtgag cgagccctttagt gaatgtttga cagtgttgtt ctctgtgtgt gctacgacgc 4920
 agggggccgca tggatgtgac tcacaccatc ggagaccacc gtcaggctca gggcgtatTTT 4980
 caacacgccc ggtttgcctg tggccaaaga ccatctttagt ttttggagg cagttttcac 5040
 cggcctcaca cacatagatg cccacttccct ttcccaaaca aagcaatcg gggaaaatTTT 5100
 cgcataactta acagccatttccctttagt gtcgtcttgg gccaaagccc ccccccgtc 5160
 ctgggacgtc atgttggaaatg gtttgcatttgc actcaagcccc accactcggtt gccccacacc 5220
 tctcctgtac cgcttgggttcttgc tggccatccaa cgaggtcacc ctcacacatc ccgtgacgaa 5280
 atacatcgcc acctgcatttgc aagccgaccc tggatgttgc accagcacat gggtcttggc 5340
 agggggagtc ttggggcccg tggccgggttgc tggccctggc accgggtgttgc tttgcatttgc 5400
 cggccgcttgc cacattaacc agcgagccgt cttggcccg gacaaggagg tcctctatga 5460
 ggctttgtat gagatggagg aatgtgcctc tagggccgtt ctcatttgc accagcacat gggcgttggc 5520
 gatagccgag atgttggaaatg ccaagatcca aggcttatttgc cagcaagctt ccaaacaagc 5580
 tcaagacata caacccacttgc tggccgttgc atggcccaat gtagaacaat tctggccaa 5640
 acacatgtgg aacttcatttgc gggccatcca atacctcgatc ggactatcca cactgcccagg 5700
 gaaccctgtca gtagtttgc tggccgttgc tggccgttgc ctcaccatc ccgtgtcaac 5760
 aagcaccacttgc atccttgc tggccgttgc acatgggggg gggctggcttgc gcatccaaa ttgcaccacc 5820
 cgcggggggcc actggccgttgc ttgtcagtgg ccttagtggg gctggccgttgc gcaatgttgc 5880
 ctttaggttgc tggccgttgc acatgggggggg agggtatggt gggccattt cggggcttgc 5940
 cgtcgcatcc aagatcatgttgc tggccgttgc gggccatccatc gaggatgtcg tcaacttgc 6000
 gcctggaaattt ctgtctccgg tggccgttgc tggccgttgc gcaatgttgc gcaatgttgc 6060
 cccgacacgttgc ggaccgggggggg aaggccgttgc ccaatggatc aatagactca ttggccgttgc 6120
 ttccagaggg aatcaacgttgc ccccccacccca ctacgttgc gggccatccatc gaggatgtcg tcaacttgc 6180
 tggatgttgc tggccgttgc tggccgttgc gcaatgttgc gcaatgttgc 6240
 gattactgttgc tggccgttgc tggccgttgc gggccatccatc gaggatgtcg tcaacttgc 6300
 ggtttgcacc atcctaacag actttaaaaa ttggccgttgc tggccgttgc gcaatgttgc 6360
 gggccgttgc tggccgttgc tggccgttgc gggccatccatc gaggatgtcg tcaacttgc 6420
 catcatgacc acacgggttgc tggccgttgc caaatatcttgc gggccatccatc gaggatgtcg tcaacttgc 6480

catgagaatc acggggccta agacctgcat gaatatctgg caggggacct ttccttatcaa 6540
 ttgttacacg gagggccagt gcgtgccaa acccgccca aactttaagg tcgcctatcg 6600
 gagggtggcg gcctcagagt acgcggaggt gacgcagcac gggtcataacc actacataac 6660
 aggactcacc actgataact tgaaagtccc ctgccaacta ccctctcccg agttctttc 6720
 ctgggtggac ggagtgcaga tccataggtt tgccccaca ccgaagccgt tttccggga 6780
 tgaggtctcg ttctgcgttg ggcttaattc atttgcgtc gggtcccagc ttccttgcga 6840
 ccctgaaccc gacacagacg tattgtgtc catgctaaca gatccatctc atatcacggc 6900
 ggagactgca gcgcggcggt tagcgcgggg gtcaccccca tccgaggcaa gtcctcggc 6960
 gagccagcta tcggcaccat cgctgcgagc cacctgcacc acccacggca aagcctatga 7020
 tgtggacatg gtggatgcta acctgttcat ggggggcgat gtgactcgga tagagtctgg 7080
 gtccaaagtg gtcgttctgg actctctcga cccaatggtc gaagaaagga ggcacccgt 7140
 gccttcgata ccatacagaat acatgctccc caagaagagg ttcccaccag ctttaccggc 7200
 ctgggcacgg cctgattaca acccaccgct tgtggaatcg tggaaaaggc cagattacca 7260
 accggccact gttgcgggct gtgctctccc tcctccttagg aaaacccga cgcctccccc 7320
 aaggaggcgc cggacagtgg gcctaagtga ggactccata ggagatgccc ttcaacagct 7380
 ggccattaag tccttggcc agccccccc aagcggcgat tcaggcctt ccacggggc 7440
 gggcgctgcc gattccggca gtcagacgccc tcctgatgag ttggccctt cggagacagg 7500
 ttccatctt tccatgcccc ccctcgaggg ggagcttggaa gatccagacc tggagcctga 7560
 gcaggttagag ccccaacccc ccccccaggg gggggtggca gtcggcgct cggactcggt 7620
 gtcctggct acttgctccg aggaggacga ctccgtcgt tgctgctcca tgtcataactc 7680
 ctggaccggg gtcataataa tcctttagt tcctgaagag gagaagttac cgattaaccc 7740
 cttgagcaac tccctgttgc gatatacaca caaggtgtac tgtaccacaa caaagagcgc 7800
 ctcactaagg gctaaaaagg taactttga taggatgcaa gtgctcgact cctactacga 7860
 ctcagtctta aaggacatta agtagcgcc tcctcaaggc acgcacggc tcctcaccat 7920
 ggaggaggt tgccagttaa ccccaacccc ttctgcaaga tctaaatatg ggtttggggc 7980
 taaggaggcc cgcagcttgt ccgggaggggc cgtaaccac atcaagtccg tggaaagga 8040
 ctcctggag gactcagaaa caccaattcc cacaaccatt atggccaaaa atgaggtgtt 8100
 ctgcgtggac cccaccaagg gggcaagaa agcagctcgcc ttatcgctt accctgaccc 8160
 cggcgtcagg gtctgcgaga agatggccct ttatgacatt acacaaaaac tcctcaggc 8220
 ggtgatgggg gtccttatg gattccagta ttcccccgt cagcgggtag agtttctctt 8280
 gaaagcatgg gcggaaaaga aggaccctat ggtttttcg tatgataacc gatgcttga 8340
 ctcaaccgtc actgagagag acatcaggac tgaggagtc atatatcggt cctgctcctt 8400
 gcccggagg gcccacactc ccatacactc gctaactgag agactttacg tgggaggggc 8460
 tatgttcaac agcaaggggc aaacctgcgg gtacaggcggt tgccgcgca gccccgtgct 8520
 caccactagc atggggaca ccatcacaatg ctacgtaaa gccttagcggt ttgtaaagc 8580
 tgcagggata atcgcgccccca caatgcttgt atgcggcgat gacttggttg tcatctcaga 8640
 aagccagggg accgaggagg acgagcgaa cctgagagcc ttacggagg ctatgaccag 8700
 gtattctgcc ctcctgggtg accccccccag accggagttat gatctggagc tgataacatc 8760
 ttgctctca aatgtgtctg tggcgctggg cccacaaggc cggcccgat actacctgac 8820
 cagagaccct accactccaa tcgccccggc tgcctggaa acagttagac actccctgt 8880
 caattcatgg ctggaaaaca tcatccagta cggcccgacc atatggctc gcatggctc 8940
 gatgacacac ttcttctcca ttctcatggc tcaagacacg ctggaccaga acctcaactt 9000
 tgagatgtac ggagcggtgt actccgtgag tccttggac ctcccgacta taattgaaag 9060
 gttacatggg cttgacgctt tttctctgca cacataact cccacacgaa tgacacgggt 9120
 ggcttcagcc ctcagaaaac ttggggcgcc acccctcaga gcgtgaaaga gccgggcacg 9180
 tgcagtcagg gcgtccctca tcctccgtgg ggggagagcg gccgtttgcg gtcgatatct 9240
 cttcaattgg gcggtaaga ccaagctcaa actcaactcca ttgcccggaaag cgcgcctcct 9300
 ggatttatcc agctggttca ccgtcggcgc cggcgggggc gacatttac acagcgtgtc 9360

gcgtgcccga ccccgcttat tgctcttgg cctactccta cttttttag gggtaggcct 9420
 tttcctactc cccgctcggt agagcggcac acattagcta cactccatag ctaactgtcc 9480
 cttttttttt tttttttttt tttttttttt tttttttttt tttttttttt 9540
 tttttttttt tttttttttt ttttctttt tttctctttt ctttctttct taccttattt 9600
 tactttcttt cctggggct ccatcttagc cctagtcacg gctagctgtg aaaggccgt 9660
 gagccgcatg actgcagaga gtgccgtaac tggctctct gcagatcatg t 9711

<210> 5
<211> 3033
<212> PRT
<213> Hepatitis C virus

<400> 5															
Met	Ser	Thr	Asn	Pro	Lys	Pro	Gln	Arg	Lys	Thr	Lys	Arg	Asn	Thr	Asn
1															15
Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gln Ile Val Gly															
20 25 30															
Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala															
35 40 45															
Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro															
50 55 60															
Ile Pro Lys Asp Arg Arg Ser Thr Gly Lys Ser Trp Gly Lys Pro Gly															
65 70 75 80															
Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Leu Gly Trp Ala Gly Trp															
85 90 95															
Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Asn Asp Pro															
100 105 110															
Arg His Arg Ser Arg Asn Val Gly Lys Val Ile Asp Thr Leu Thr Cys															
115 120 125															
Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Val Val Gly Ala Pro Leu															
130 135 140															
Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp															
145 150 155 160															
Gly Val Asn Phe Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile															
165 170 175															
Phe Leu Leu Ala Leu Leu Ser Cys Ile Thr Thr Pro Val Ser Ala Ala															

180	185	190
Glu Val Lys Asn Ile Ser Thr Gly Tyr Met Val Thr Asn Asp Cys Thr		
195	200	205
Asn Asp Ser Ile Thr Trp Gln Leu Gln Ala Ala Val Leu His Val Pro		
210	215	220
Gly Cys Val Pro Cys Glu Lys Val Gly Asn Ala Ser Gln Cys Trp Ile		
225	230	235
Pro Val Ser Pro Asn Val Ala Val Gln Arg Pro Gly Ala Leu Thr Gln		
245	250	255
Gly Leu Arg Thr His Ile Asp Met Val Val Met Ser Ala Thr Leu Cys		
260	265	270
Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Gly Val Met Leu Ala Ala		
275	280	285
Gln Met Phe Ile Val Ser Pro Gln His His Trp Phe Val Gln Asp Cys		
290	295	300
Asn Cys Ser Ile Tyr Pro Gly Thr Ile Thr Gly His Arg Met Ala Trp		
305	310	315
Asp Met Met Met Asn Trp Ser Pro Thr Ala Thr Met Ile Leu Ala Tyr		
325	330	335
Ala Met Arg Val Pro Glu Val Ile Ile Asp Ile Ile Ser Gly Ala His		
340	345	350
Trp Gly Val Met Phe Gly Leu Ala Tyr Phe Ser Met Gln Gly Ala Trp		
355	360	365
Ala Lys Val Val Val Ile Leu Leu Leu Ala Ala Gly Val Asp Ala Arg		
370	375	380
Thr His Thr Val Gly Gly Ser Ala Ala Gln Thr Thr Gly Arg Leu Thr		
385	390	395
400		
Ser Leu Phe Asp Met Gly Pro Arg Gln Lys Ile Gln Leu Val Asn Thr		
405	410	415
Asn Gly Ser Trp His Ile Asn Arg Thr Ala Leu Asn Cys Asn Asp Ser		
420	425	430
Leu His Thr Gly Phe Ile Ala Ser Leu Phe Tyr Thr His Ser Phe Asn		

435

440

445

Ser Ser Gly Cys Pro Glu Arg Met Ser Ala Cys Arg Ser Ile Glu Ala
450 455 460

Phe Arg Val Gly Trp Gly Ala Leu Gln Tyr Glu Asp Asn Val Thr Asn
465 470 475 480

Pro Glu Asp Met Arg Pro Tyr Cys Trp His Tyr Pro Pro Arg Gln Cys
485 490 495

Gly Val Val Ser Ala Lys Thr Val Cys Gly Pro Val Tyr Cys Phe Thr
500 505 510

Pro Ser Pro Val Val Val Gly Thr Thr Asp Arg Leu Gly Ala Pro Thr
515 520 525

Tyr Thr Trp Gly Glu Asn Glu Thr Asp Val Phe Leu Leu Asn Ser Thr
530 535 540

Arg Pro Pro Leu Gly Ser Trp Phe Gly Cys Thr Trp Met Asn Ser Ser
545 550 555 560

Gly Tyr Thr Lys Thr Cys Gly Ala Pro Pro Cys Arg Thr Arg Ala Asp
565 570 575

Phe Asn Ala Ser Thr Asp Leu Leu Cys Pro Thr Asp Cys Phe Arg Lys
580 585 590

His Pro Asp Thr Thr Tyr Leu Lys Cys Gly Ser Gly Pro Trp Leu Thr
595 600 605

Pro Arg Cys Leu Ile Asp Tyr Pro Tyr Arg Leu Trp His Tyr Pro Cys
610 615 620

Thr Val Asn Tyr Thr Ile Phe Lys Ile Arg Met Tyr Val Gly Gly Val
625 630 635 640

Glu His Arg Leu Thr Ala Ala Cys Asn Phe Thr Arg Gly Asp Arg Cys
645 650 655

Asn Leu Glu Asp Arg Asp Arg Ser Gln Leu Ser Pro Leu Leu His Ser
660 665 670

Thr Thr Glu Trp Ala Ile Leu Pro Cys Ser Tyr Ser Asp Leu Pro Ala
675 680 685

Leu Ser Thr Gly Leu Leu His Leu His Gln Asn Ile Val Asp Val Gln

690	695	700
Phe Met Tyr Gly Leu Ser Pro Ala Leu Thr Lys Tyr Ile Val Arg Trp		
705	710	715
720		
Glu Trp Val Ile Leu Leu Phe Leu Leu Ala Asp Ala Arg Val Cys		
725	730	735
Ala Cys Leu Trp Met Leu Ile Leu Leu Gly Gln Ala Glu Ala Ala Leu		
740	745	750
Glu Lys Leu Val Ile Leu His Ala Ala Ser Ala Ala Ser Cys Asn Gly		
755	760	765
Phe Leu Tyr Phe Val Ile Phe Phe Val Ala Ala Trp Tyr Ile Lys Gly		
770	775	780
Arg Val Val Pro Leu Ala Thr Tyr Ser Leu Thr Gly Leu Trp Ser Phe		
785	790	795
800		
Ser Leu Leu Leu Leu Ala Leu Pro Gln Gln Ala Tyr Ala Tyr Asp Ala		
805	810	815
Ser Val His Gly Gln Ile Gly Ala Ala Leu Leu Val Met Ile Thr Leu		
820	825	830
Phe Thr Leu Thr Pro Gly Tyr Lys Thr Leu Leu Ser Arg Phe Leu Trp		
835	840	845
Trp Leu Cys Tyr Leu Leu Thr Leu Gly Glu Ala Met Val Gln Glu Trp		
850	855	860
Ala Pro Pro Met Gln Val Arg Gly Gly Arg Asp Gly Ile Ile Trp Ala		
865	870	875
880		
Val Ala Ile Phe Tyr Pro Gly Val Val Phe Asp Ile Thr Lys Trp Leu		
885	890	895
Leu Ala Val Leu Gly Pro Ala Tyr Leu Leu Lys Gly Ala Leu Thr Arg		
900	905	910
Val Pro Tyr Phe Val Arg Ala His Ala Leu Leu Arg Met Cys Thr Met		
915	920	925
Ala Arg His Leu Ala Gly Gly Arg Tyr Val Gln Met Ala Leu Leu Ala		
930	935	940
Leu Gly Arg Trp Thr Gly Thr Tyr Ile Tyr Asp His Leu Thr Pro Met		

945	950	955	960
Ser Asp Trp Ala Ala Ser Gly Leu Arg Asp Leu Ala Val Ala Val Glu			
965	970	975	
Pro Ile Ile Phe Ser Pro Met Glu Lys Lys Val Ile Val Trp Gly Ala			
980	985	990	
Glu Thr Ala Ala Cys Gly Asp Ile Leu His Gly Leu Pro Val Ser Ala			
995	1000	1005	
Arg Leu Gly Arg Glu Val Leu Leu Gly Pro Ala Asp Gly Tyr Thr Ser			
1010	1015	1020	
Lys Gly Trp Ser Leu Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr			
1025	1030	1035	1040
Arg Gly Leu Leu Gly Thr Ile Val Val Ser Met Thr Gly Arg Asp Lys			
1045	1050	1055	
Thr Glu Gln Ala Gly Glu Ile Gln Val Leu Ser Thr Val Thr Gln Ser			
1060	1065	1070	
Phe Leu Gly Thr Ser Ile Ser Gly Val Leu Trp Thr Val Tyr His Gly			
1075	1080	1085	
Ala Gly Asn Lys Thr Leu Ala Gly Ser Arg Gly Pro Val Thr Gln Met			
1090	1095	1100	
Tyr Ser Ser Ala Glu Gly Asp Leu Val Gly Trp Pro Ser Pro Pro Gly			
1105	1110	1115	1120
Thr Lys Ser Leu Glu Pro Cys Thr Cys Gly Ala Val Asp Leu Tyr Leu			
1125	1130	1135	
Val Thr Arg Asn Ala Asp Val Ile Pro Ala Arg Arg Gly Asp Lys			
1140	1145	1150	
Arg Gly Ala Leu Leu Ser Pro Arg Pro Leu Ser Thr Leu Lys Gly Ser			
1155	1160	1165	
Ser Gly Gly Pro Val Leu Cys Pro Arg Gly His Ala Val Gly Val Phe			
1170	1175	1180	
Arg Ala Ala Val Cys Ser Arg Gly Val Ala Lys Ser Ile Asp Phe Ile			
1185	1190	1195	1200
Pro Val Glu Thr Leu Asp Ile Val Thr Arg Ser Pro Thr Phe Ser Asp			

1205	1210	1215
Asn Ser Thr Pro Pro Ala Val Pro Gln Thr Tyr Gln Val Gly Tyr Leu		
1220	1225	1230
His Ala Pro Thr Gly Ser Gly Lys Ser Thr Lys Val Pro Val Ala Tyr		
1235	1240	1245
Ala Ala Gln Gly Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala		
1250	1255	1260
Thr Leu Gly Phe Gly Ala Tyr Leu Ser Lys Ala His Gly Ile Asn Pro		
1265	1270	1275
Asn Ile Arg Thr Gly Val Arg Thr Val Thr Thr Gly Ala Pro Ile Thr		
1285	1290	1295
Tyr Ser Thr Tyr Gly Lys Phe Leu Ala Asp Gly Gly Cys Ala Gly Gly		
1300	1305	1310
Ala Tyr Asp Ile Ile Ile Cys Asp Glu Cys His Ala Val Asp Ser Thr		
1315	1320	1325
Thr Ile Leu Gly Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly		
1330	1335	1340
Val Arg Leu Thr Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr		
1345	1350	1355
Thr Pro His Pro Asn Ile Glu Glu Val Ala Leu Gly Gln Glu Gly Glu		
1365	1370	1375
Ile Pro Phe Tyr Gly Arg Ala Ile Pro Leu Ser Tyr Ile Lys Gly Gly		
1380	1385	1390
Arg His Leu Ile Phe Cys His Ser Lys Lys Cys Asp Glu Leu Ala		
1395	1400	1405
Ala Ala Leu Arg Gly Met Gly Leu Asn Ser Val Ala Tyr Tyr Arg Gly		
1410	1415	1420
Leu Asp Val Ser Val Ile Pro Thr Gln Gly Asp Val Val Val Val Ala		
1425	1430	1435
Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe Asp Ser Val Ile		
1445	1450	1455
Asp Cys Asn Val Ala Val Thr Gln Val Val Asp Phe Ser Leu Asp Pro		

1460

1465

1470

Thr Phe Thr Ile Thr Thr Gln Ile Val Pro Gln Asp Ala Val Ser Arg
1475 1480 1485

Ser Gln Arg Arg Gly Arg Thr Gly Arg Gly Arg Leu Gly Ile Tyr Arg
1490 1495 1500

Tyr Val Ser Thr Gly Glu Arg Ala Ser Gly Met Phe Asp Ser Val Val
1505 1510 1515 1520

Leu Cys Glu Cys Tyr Asp Ala Gly Ala Ala Trp Tyr Glu Leu Thr Pro
1525 1530 1535

Ser Glu Thr Thr Val Arg Leu Arg Ala Tyr Phe Asn Thr Pro Gly Leu
1540 1545 1550

Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Ala Val Phe Thr Gly
1555 1560 1565

Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly
1570 1575 1580

Glu Asn Phe Ala Tyr Leu Thr Ala Tyr Gln Ala Thr Val Cys Ala Arg
1585 1590 1595 1600

Ala Lys Ala Pro Pro Pro Ser Trp Asp Val Met Trp Lys Cys Leu Thr
1605 1610 1615

Arg Leu Lys Pro Thr Leu Val Gly Pro Thr Pro Leu Leu Tyr Arg Leu
1620 1625 1630

Gly Ser Val Thr Asn Glu Val Thr Leu Thr His Pro Val Thr Lys Tyr
1635 1640 1645

Ile Ala Thr Cys Met Gln Ala Asp Leu Glu Val Met Thr Ser Thr Trp
1650 1655 1660

Val Leu Ala Gly Gly Val Leu Ala Ala Val Ala Ala Tyr Cys Leu Ala
1665 1670 1675 1680

Thr Gly Cys Val Cys Ile Ile Gly Arg Leu His Ile Asn Gln Arg Ala
1685 1690 1695

Val Val Ala Pro Asp Lys Glu Val Leu Tyr Glu Ala Phe Asp Glu Met
1700 1705 1710

Glu Glu Cys Ala Ser Arg Ala Ala Leu Ile Glu Glu Gly Gln Arg Ile

1715

1720

1725

Ala Glu Met Leu Lys Ser Lys Ile Gln Gly Leu Leu Gln Gln Ala Ser
1730 1735 1740

Lys Gln Ala Gln Asp Ile Gln Pro Thr Val Gln Ala Ser Trp Pro Lys
1745 1750 1755 1760

Val Glu Gln Phe Trp Ala Lys His Met Trp Asn Phe Ile Ser Gly Ile
1765 1770 1775

Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro Ala Val Ala
1780 1785 1790

Ser Met Met Ala Phe Ser Ala Ala Leu Thr Ser Pro Leu Ser Thr Ser
1795 1800 1805

Thr Thr Ile Leu Leu Asn Ile Leu Gly Gly Trp Leu Ala Ser Gln Ile
1810 1815 1820

Ala Pro Pro Ala Gly Ala Thr Gly Phe Val Val Ser Gly Leu Val Gly
1825 1830 1835 1840

Ala Ala Val Gly Ser Ile Gly Leu Gly Lys Val Leu Val Asp Ile Leu
1845 1850 1855

Ala Gly Tyr Gly Ala Gly Ile Ser Gly Ala Leu Val Ala Phe Lys Ile
1860 1865 1870

Met Ser Gly Glu Lys Pro Ser Met Glu Asp Val Val Asn Leu Leu Pro
1875 1880 1885

Gly Ile Leu Ser Pro Gly Ala Leu Val Val Gly Val Ile Cys Ala Ala
1890 1895 1900

Ile Leu Arg Arg His Val Gly Pro Gly Glu Gly Ala Val Gln Trp Met
1905 1910 1915 1920

Asn Arg Leu Ile Ala Phe Ala Ser Arg Gly Asn His Val Ala Pro Thr
1925 1930 1935

His Tyr Val Thr Glu Ser Asp Ala Ser Gln Arg Val Thr Gln Leu Leu
1940 1945 1950

Gly Ser Leu Thr Ile Thr Ser Leu Leu Arg Arg Leu His Asn Trp Ile
1955 1960 1965

Thr Glu Asp Cys Pro Ile Pro Cys Gly Ser Trp Leu Arg Asp Val

1970	1975	1980
Trp Asp Trp Val Cys Thr Ile Leu Thr Asp Phe Lys Asn Trp Leu Thr		
1985	1990	1995
1980		
Ser Lys Leu Phe Pro Lys Met Pro Gly Leu Pro Phe Val Ser Cys Gln		
2005	2010	2015
Lys Gly Tyr Lys Gly Val Trp Ala Gly Thr Gly Ile Met Thr Thr Arg		
2020	2025	2030
Cys Pro Cys Gly Ala Asn Ile Ser Gly Asn Val Arg Leu Gly Ser Met		
2035	2040	2045
Arg Ile Thr Gly Pro Lys Thr Cys Met Asn Ile Trp Gln Gly Thr Phe		
2050	2055	2060
Pro Ile Asn Cys Tyr Thr Glu Gly Gln Cys Val Pro Lys Pro Ala Pro		
2065	2070	2075
2080		
Asn Phe Lys Val Ala Ile Trp Arg Val Ala Ala Ser Glu Tyr Ala Glu		
2085	2090	2095
Val Thr Gln His Gly Ser Tyr His Tyr Ile Thr Gly Leu Thr Thr Asp		
2100	2105	2110
Asn Leu Lys Val Pro Cys Gln Leu Pro Ser Pro Glu Phe Phe Ser Trp		
2115	2120	2125
2130		
Val Asp Gly Val Gln Ile His Arg Phe Ala Pro Thr Pro Lys Pro Phe		
2135	2140	
Phe Arg Asp Glu Val Ser Phe Cys Val Gly Leu Asn Ser Phe Val Val		
2145	2150	2155
2160		
Gly Ser Gln Leu Pro Cys Asp Pro Glu Pro Asp Thr Asp Val Leu Met		
2165	2170	2175
Ser Met Leu Thr Asp Pro Ser His Ile Thr Ala Glu Thr Ala Ala Arg		
2180	2185	2190
Arg Leu Ala Arg Gly Ser Pro Pro Ser Glu Ala Ser Ser Ser Ala Ser		
2195	2200	2205
Gln Leu Ser Ala Pro Ser Leu Arg Ala Thr Cys Thr Thr His Gly Lys		
2210	2215	2220
Ala Tyr Asp Val Asp Met Val Asp Ala Asn Leu Phe Met Gly Gly Asp		

2225	2230	2235	2240
Val Thr Arg Ile Glu Ser Gly Ser Lys Val Val Val Leu Asp Ser Leu			
2245	2250	2255	
Asp Pro Met Val Glu Glu Arg Ser Asp Leu Glu Pro Ser Ile Pro Ser			
2260	2265	2270	
Glu Tyr Met Leu Pro Lys Lys Arg Phe Pro Pro Ala Leu Pro Ala Trp			
2275	2280	2285	
Ala Arg Pro Asp Tyr Asn Pro Pro Leu Val Glu Ser Trp Lys Arg Pro			
2290	2295	2300	
Asp Tyr Gln Pro Ala Thr Val Ala Gly Cys Ala Leu Pro Pro Pro Arg			
2305	2310	2315	2320
Lys Thr Pro Thr Pro Pro Arg Arg Arg Arg Thr Val Gly Leu Ser			
2325	2330	2335	
Glu Asp Ser Ile Gly Asp Ala Leu Gln Gln Leu Ala Ile Lys Ser Phe			
2340	2345	2350	
Gly Gln Pro Pro Pro Ser Gly Asp Ser Gly Leu Ser Thr Gly Ala Gly			
2355	2360	2365	
Ala Ala Asp Ser Gly Ser Gln Thr Pro Pro Asp Glu Leu Ala Leu Ser			
2370	2375	2380	
Glu Thr Gly Ser Ile Ser Ser Met Pro Pro Leu Glu Gly Glu Leu Gly			
2385	2390	2395	2400
Asp Pro Asp Leu Glu Pro Glu Gln Val Glu Pro Gln Pro Pro Pro Gln			
2405	2410	2415	
Gly Gly Val Ala Ala Pro Gly Ser Asp Ser Gly Ser Trp Ser Thr Cys			
2420	2425	2430	
Ser Glu Glu Asp Asp Ser Val Val Cys Cys Ser Met Ser Tyr Ser Trp			
2435	2440	2445	
Thr Gly Ala Leu Ile Thr Pro Cys Ser Pro Glu Glu Lys Leu Pro			
2450	2455	2460	
Ile Asn Pro Leu Ser Asn Ser Leu Leu Arg Tyr His Asn Lys Val Tyr			
2465	2470	2475	2480
Cys Thr Thr Lys Ser Ala Ser Leu Arg Ala Lys Lys Val Thr Phe			

2485

2490

2495

Asp Arg Met Gln Val Leu Asp Ser Tyr Tyr Asp Ser Val Leu Lys Asp
2500 2505 2510

Ile Lys Leu Ala Ala Ser Lys Val Thr Ala Arg Leu Leu Thr Met Glu
2515 2520 2525

Glu Ala Cys Gln Leu Thr Pro Pro His Ser Ala Arg Ser Lys Tyr Gly
2530 2535 2540

Phe Gly Ala Lys Glu Val Arg Ser Leu Ser Gly Arg Ala Val Asn His
2545 2550 2555 2560

Ile Lys Ser Val Trp Lys Asp Leu Leu Glu Asp Ser Glu Thr Pro Ile
2565 2570 2575

Pro Thr Thr Ile Met Ala Lys Asn Glu Val Phe Cys Val Asp Pro Thr
2580 2585 2590

Lys Gly Gly Lys Lys Ala Ala Arg Leu Ile Val Tyr Pro Asp Leu Gly
2595 2600 2605

Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp Ile Thr Gln Lys Leu
2610 2615 2620

Pro Gln Ala Val Met Gly Ala Ser Tyr Gly Phe Gln Tyr Ser Pro Ala
2625 2630 2635 2640

Gln Arg Val Glu Phe Leu Leu Lys Ala Trp Ala Glu Lys Lys Asp Pro
2645 2650 2655

Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp Ser Thr Val Thr Glu
2660 2665 2670

Arg Asp Ile Arg Thr Glu Glu Ser Ile Tyr Arg Ala Cys Ser Leu Pro
2675 2680 2685

Glu Glu Ala His Thr Ala Ile His Ser Leu Thr Glu Arg Leu Tyr Val
2690 2695 2700

Gly Gly Pro Met Phe Asn Ser Lys Gly Gln Thr Cys Gly Tyr Arg Arg
2705 2710 2715 2720

Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Met Gly Asn Thr Ile Thr
2725 2730 2735

Cys Tyr Val Lys Ala Leu Ala Ala Cys Lys Ala Ala Gly Ile Ile Ala

2740

2745

2750

Pro Thr Met Leu Val Cys Gly Asp Asp Leu Val Val Ile Ser Glu Ser
2755 2760 2765

Gln Gly Thr Glu Glu Asp Glu Arg Asn Leu Arg Ala Phe Thr Glu Ala
2770 2775 2780

Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro Pro Arg Pro Glu Tyr
2785 2790 2795 2800

Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn Val Ser Val Ala Leu
2805 2810 2815

Gly Pro Gln Gly Arg Arg Tyr Tyr Leu Thr Arg Asp Pro Thr Thr
2820 2825 2830

Pro Ile Ala Arg Ala Ala Trp Glu Thr Val Arg His Ser Pro Val Asn
2835 2840 2845

Ser Trp Leu Gly Asn Ile Ile Gln Tyr Ala Pro Thr Ile Trp Ala Arg
2850 2855 2860

Met Val Leu Met Thr His Phe Phe Ser Ile Leu Met Ala Gln Asp Thr
2865 2870 2875 2880

Leu Asp Gln Asn Leu Asn Phe Glu Met Tyr Gly Ala Val Tyr Ser Val
2885 2890 2895

Ser Pro Leu Asp Leu Pro Ala Ile Ile Glu Arg Leu His Gly Leu Asp
2900 2905 2910

Ala Phe Ser Leu His Thr Tyr Thr Pro His Glu Leu Thr Arg Val Ala
2915 2920 2925

Ser Ala Leu Arg Lys Leu Gly Ala Pro Pro Leu Arg Ala Trp Lys Ser
2930 2935 2940

Arg Ala Arg Ala Val Arg Ala Ser Leu Ile Ser Arg Gly Gly Arg Ala
2945 2950 2955 2960

Ala Val Cys Gly Arg Tyr Leu Phe Asn Trp Ala Val Lys Thr Lys Leu
2965 2970 2975

Lys Leu Thr Pro Leu Pro Glu Ala Arg Leu Leu Asp Leu Ser Ser Trp
2980 2985 2990

Phe Thr Val Gly Ala Gly Gly Asp Ile Tyr His Ser Val Ser Arg

2995

3000

3005

Ala Arg Pro Arg Leu Leu Leu Phe Gly Leu Leu Leu Leu Phe Val Gly
3010 3015 3020

Val Gly Leu Phe Leu Leu Pro Ala Arg
3025 3030